Bulletin 709

Proceedings:

Northeastern Ohio Litter and Recycling Seminar

March 15, 1983

OSU Cooperative Extension Service
The Ohio State University

This publication is the edited proceedings of a workshop sponsored by The Ohio State University Cooperative Extension Service as a part of the Litter Control and Recycling Education Program. Paul R. Thomas, Assistant Director, Community and Natural Resource Development, John D. Rohrer, Leader, Community Services, and Program Coordinator.

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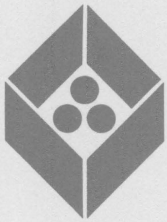

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Proceedings:

Northeastern Ohio Litter and Recycling Seminar

March 15, 1983
Brown Derby Inn
Boston Heights, Ohio

The Ohio Cooperative Extension Service
Community and Natural Resource Development

in cooperation with

The Office of Litter Control
Ohio Department of Natural Resources

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Preface

The word recycling stirs up many images - not all of them positive! It may vary from the overly zealous environmentalist to the picture of a junk yard full of scrap automobiles. But recycling is becoming an important trend in the daily concern of waste management, waste reduction, and energy conservation.

The Ohio State University Cooperative Extension Service has worked on recycling for many years beginning with various community groups and more recently with the Ohio Department of Natural Resources' Office of Litter Control. These "Proceedings" represent the outcome of one such effort. Business, industry, government, education, and citizen representatives all met to discuss issues important to recycling: markets, trends, public policy, and new technology. These proceedings offer the reader different views on recycling whether it be an environmental, political, or economical perspective.

The Ohio Cooperative Extension Service provides continuing educational programs in Community and Natural Resource Development, Agricultural Industry, Home Economics, and 4-H/Youth Development for the citizens of Ohio. Major emphasis is given to economic development and to related social and cultural needs of people in the state.

The Ohio Cooperative Extension Service community development program has a long history of working with local leaders for community improvement. Local groups working together do make a difference in the quality of life in our communities. Some of the topics where Extension has assisted includes: land use and development policy, community services, tax structure and fiscal management, community health and safety, economic development, crime prevention, energy utilization and conservation, housing, outdoor recreation, and pollution control.

The proceedings of the Litter and Recycling Seminar can serve as a guide for many community groups looking for new ways to organize, collect and sell waste materials.

The Office of Litter Control, Ohio Department of Natural Resources which provided funds for this educational program can also provide assistance through the Technical Assistance, Community Grants and Public Education sections of their office.

Paul R. Thomas
Assistant Director, Community and Natural
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Ohio Cooperative Extension Service
The Ohio State University

WELCOME AND INTRODUCTION

JOHN D. ROHRER, LEADER, COMMUNITY SERVICES
OHIO COOPERATIVE EXTENSION SERVICE

On December 17, 1982, a small group gathered in Cleveland to discuss recycling; past, present and future. The group represented industry, local government, and community groups and the consensus was that the group should be expanded and meet again; this seminar is the result of that meeting. I want to see if we have met the first goal; do we have the variety of people here today that will be needed to make litter or recycling programs successful? I am going to read several different categories. If you can identify with anyone of them raise your hand with that group. The groups selected were; industry or re-manufacturing plants; community not-for profit intake centers (includes donation or a buy back center); scrap dealers; other buy-back businesses; local or state government; educational, research, consulting firms and foundations; and interested citizens (each group with broad representation was identified in turn). That gives us a little idea of who we are and I hope that as we go through the day there will be time for questions and discussions with the panel members with particular emphasis on how our various interests do interact and how we can work as a team.

The Cooperative Extension Service of The Ohio State University has been conducting: public affairs educational programs, community development work including solid waste management, for a number of years. The Cooperative Extension Service has offices in each county. It may be listed in your telephone book as the Cooperative Extension Service and it might be listed by any one of the four program areas. They are: Agriculture Industry, 4-H, and other youth, Home Economics, and Community and Natural Resource Development.

About 12 years ago with some help from Timkin Foundation funds we conducted a pilot project on a "Green Box" (2-4 cubic yard boxes) collection system in several counties. We later worked with 40 cubic yard drop-off boxes and eventually compactor boxes for rural solid waste collection. This work has continued. We are currently working on a computer assisted economic planning model for solid waste collection, and location of sanitary landfills particularly for rural areas. In the greater Cleveland area, the Extension Service in cooperation with the Gund Foundation has developed a leaf composting project for municipalities. This was begun several years ago and is now largely self supporting; cities save in transportation and landfill fees and landfill life is extended. Extension is cooperating with the Office of Litter Control, as I know many of you are, in the Litter Control educational program. We have an emphasis with our youth 4-H programs. These programs are used with 4-H Club projects, camping programs, fairs and similar activities. 4-H members sometimes conduct community cleanup campaigns and we have had some interesting recycling projects all over Ohio. We have also given some assistance to some community groups in developing recycling centers.

In spite of the current economic recession, I think we are in for some great changes in recycling. The National Association of Recycling Industries (NARI) has recently been successful, for example, in the long awaited rail-rate roll back for recyclable materials. This rail-rate roll back will be as high as 49% for such items as nonferrous metal, waste paper, textiles, and rubber. The NARI also reports the

percentage of the total aluminum output served by recycling has been increased from 28 to 36% from 1981 to 1982. In other words, 36 percent of the aluminum produced came from recycled material rather than ore. This is a one year change. Lead went from 50-52% zinc from 15-16%, stainless steel from 40-45%, iron and steel increased 25-27%, and copper and paper stayed about the same at 54% and 18% respectively.

Many of you are representing local government and we know municipalities are always looking for a cheaper way to dispose of municipal solid waste. I think we will soon see the day when most consumer waste recycling will become an economic reality. Even if it does not provide revenues above cost, it may reduce the total disposal cost. The reduction in disposal cost coupled with the sales of recyclable material may make recycling the most economical disposal method. A paper has been written by a Dr. Pete Clapham, that is included in your packet. It is one of the best we have seen giving a general overall plan.

There is a big job to do and, in spite of our recent success in improving the percentage of recycled material, nearly 50% of the aluminum beverage cans are still discarded or landfilled everyday. We have only begun with glass with about 6% being recycled. The newsprint markets need to be expanded and the list goes on. For recycling to work it has been shown it takes the cooperation of both the private and public sectors. I think this is not a zero sum game. There can be more winners than losers. I know that each looks at their comparative position and wonders whose ox might get gored. This is not the time for that. It is the time to look how we can work together--both the public and private sectors to see how these programs can be put together. How can recycling become economically feasible? Can we make it work in more Ohio communities? This is the overall theme for today.

LITTER ENFORCEMENT IN THE CITY OF CLEVELAND
WILLIAM BETLEY, SARGEANT
CLEVELAND POLICE DEPARTMENT

Good morning ladies and gentlemen, I am here to explain how the Litter Enforcement Detail was implemented in the City of Cleveland. It began April 22, 1982; our first concern was what applicable codes pertain to litter. In police department work you have to determine what is a feloney, a misdemeaner, and what is an arrestable offense. City Council has passed a codified ordinance regarding illegal dumping. Dumping in the City of Cleveland is a misdemeanor with a mandatory minimum fine of $500 and it is an arrestable offense. Along with this codified ordinance, we have stipulations relative to impounding vehicles.

The litter program is funded by the State of Ohio Department of Natural Resources, and it provides for two full-time police officers to patrol the City of Cleveland in unmarked vehicles. Currently we are using battered pick up trucks and we have even put trash in the back of them so that the police officers will not be spotted as in detective cars. We started with detective cars but they were spotted and so we were unsuccessful.

The officers' function is to apprehend individuals illegally dumping solid waste within the city. When the program was first started, an individual caught illegally dumping would have their vehicle impounded and information relative to the identity of the individual was obtained. The facts were then presented to the prosecutor in order to obtain a warrant for the person's arrest. We were not very successful in this due to the fact that once the warrant was issued and we served the warrant, nine times out of ten the person would not show up in court. We had to do away with that portion of the program. Instead we started arresting individuals caught illegally dumping in the city on the spot.

At that point in time, another problem arose. When our first four cases were brought before the judges, the judges did not realize there was a minimum $500 mandatory fine. The fines imposed against the violators were $50 a piece on each of these four cases. If you are going to dump in the City of Cleveland and get fined $50, why not? You might as well dump because the fine is so ridiculous. So we had these four cases vacated and retried; all four individuals were fined $500.

We had a severe problem with old tires abandoned on vacant lots. This can cause a real hazard to individuals living in the city due to the fact that rats sometimes make their nests in the tires and water can accumulate in the summertime creating a mosquito breeding ground. One particular individual caught for the first time was assessed $500 and a suspended jail term. Then we caught him a second time and he was fined $1,000. Our investigation revealed that this individual had a route of gas stations where he would pick up tires for 75¢ per tire. Then he would use vacant lots in the City of Cleveland to store these tires until they could be separated into poly-steel tires, steel radials, etc. and then he would take them to a recycling plant in either Akron or Toledo which turned out to be quite a little business. In the meantime, citizens of Cleveland were suffering not only with the "eye sore," but also the health hazard.

Currently, funding to Cleveland by the Ohio Department of Natural Resources has been increased for in 1983. There are now four full-time police officers assigned to the litter detail. These officers work in two shifts; 7:00 A.M. to 3:00 P.M. and 3:00 P.M. to 11:00 P.M. seven nights a week. Cleveland, in contrast to Sheriff's departments and communities that participate in this program, has in its enforcement program the power to arrest people. In the State of Ohio, there are felonies, misdemeanors, and minor misdemeanors; under a littering code, you cannot arrest for minor misdemeanors but the Cleveland City Council has made illegal dumping a "misdemeanor three," which is an arrestable defense. Sheriff's violators can only cite departments under Ohio's law. No physical arrest can be made and they cannot impound the vehicle.

In closing, I would like to ask that anyone who has a problem relating to illegal dumping or information regarding dumping sites inside Cleveland call 623-5191 and ask for someone assigned to the Litter Enforcement Detail. We will followup on any information you give us.

COLLECTION: AN OVERVIEW
A PANEL ON A COMMUNITY APPROACH

TRASH ILLUSTRATED
NEW WAYS TO PICTURE THE WASTE STREAM
ELLEN KNOX, CUYAHOGA COUNTY SANITARY ENGINEER

Mayors are always complaining that "my people think that the garbage problem is solved when our trucks carry the trash bags away from the curb." Indeed it may be that the difficulty of perceiving the dimensions of the solid waste problem is a major factor in our failure, as yet, to come to terms with it. With the help of some graphs and pictures, I hope to share with you some of the ideas that I have found useful in a decade of working in the field of Solid Waste Management.

One place to start is to think about what we mean by VALUE. "Trash is trash because it isn't worth anything," is what I found myself saying one time to the House Environment Committee in a discussion of some earlier Bottle Bill. If we try to track the flow of materials through our society, starting with mining the material out of the ground, and ending up when its usefulness is over by burying it once again, we can do this in terms of the value at successive stages. Figure 1 represents the life history of almost any material--it might as well be sand, for a first example.

The sand deposit, heritage of geologic processes, has a neutral value as it lies undisturbed. Value is added as it experiences successive operations. First is extracation or mining. Then comes refining, adding chemicals to make it into glass. Then we have fabrication, forming the glass into, say a pop bottle. The bottle, by now embodying a good deal of energy both in its manufacture and in having been transported to the point where it will be put to use, is then filled with the flavored water that is to be distributed. Value increases as the pop is displayed at a grocery store and the price that is paid at point P, can be said to represent the costs incurred

in the process to this stage. The Customer pays P, but continues to add value to the bottle and its cargo by taking it home and chilling it. The peak of value is found at point C when, in response to an imperative thirst, the beverage is consumed, oh, delicious!

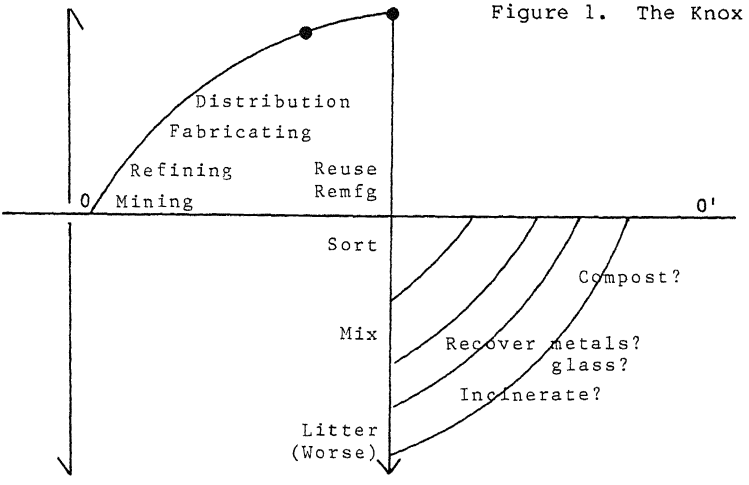


Figure 1. The Knox Curve.

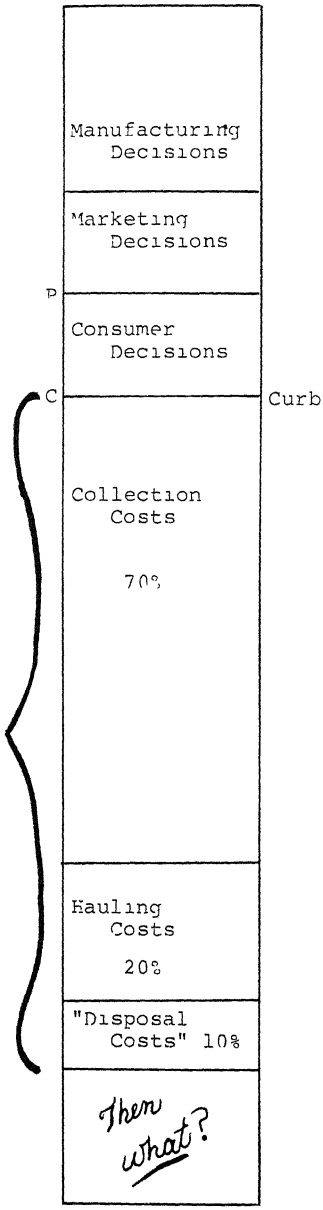
Instantly, however, the value of the container experiences an abrupt drop (there is a branch of mathematics that deals with the "Catastrophe Theory" which probably applies here) and the empty bottle becomes not an asset, but a liability. It is in the way and it might, after awhile begin to smell or to attract unpleasant organisms. (In the Saturday papers, just before the Tuesday when we had to vote on Ohio's latest Bottle Bill (1979), sure enough the Director of the Ohio Department of Health unleased the anticipated cockroach, assuring us that the backrooms of all the grocery stores in Ohio would be overrun with vermin if we were to return to returnables.) From this stage on, our bottle can travel on any of a variety of disposal paths. The negative value or liability to which it sinks can be an extreme of littering, as indicated on the lowest of the disposal paths, or some intermediate amount. At the end of

these paths our material is back in the earth's surface, in some landfill, neutral once more not that its potential value is the 0 it had, initially. It is shown as a 0' to suggest the contamination, mixing with other materials, dispersal, and other sorts of degradation that mean that no one, for a long time, is likely to mine that dump for materials to use in making a new batch of bottles.

This same analysis, using what can be called the Knox Curve, can be applied to other throwaway containers. For an aluminum can the big boost in "value added" is at the outset, when the metal is won from the bauxite ore through a process of electrolytic separation. Aluminum is sometimes referred to as "frozen electricity" since 95% of its total fabrication energy was in this one step. Recyclers often muse on a possible society where aluminum would be used for all food containers, and then all of it collected, melted down and refabricated for the next round of deliveries. There is a sense in which the daily newspaper can be tracked by this same curve; once it is "emptied" of its news its value plummets and the consumer then assigns it to some path for disposal, more or less responsibly.

Another use for the Knox Curve is as a description of what we often call our economic system, elsewhere defined as "the accelerating conversion of resources into garbage." Some people earn their livelihood by adding value; as miners, truck drivers, and distributors, adding to the GNP. How, though, do we factor in the activities that reduce the liability, all those who pick up the litter, drive it to the landfill, and spread the cover at the burial site? In Cuyahoga County it costs approximately 1/3¢ to collect, haul, and dispose of a single throwaway container, the container having been "disposed of thoughtfully" by the consumer, who placed it in some authorized trash can. For the fraction of containers that are littered (about 1/4 of the total) the costs, again paid for by taxes from everyone, can be estimated as ten times that, or 3¢ each time you toss a can out for someone else to deal with. If the municipalities of Cuyahoga County shell out $50,000,000 yearly for trash collection, hauling and burial (that was 1978's estimate) how does this contribute to our wealth?

Figure 2.
The Waste Stream.

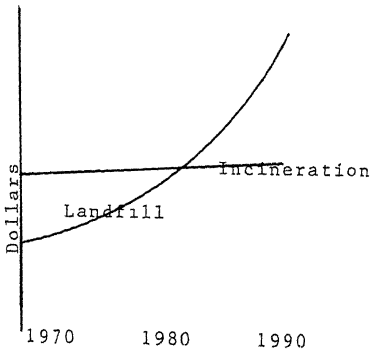


Now for Figure 2 which is entitled "Down by the Old Waste Stream." Much of my experience with these concepts comes from the past five years as I have worked in the Sanitary Engineering Department of Cuyahoga County, Solid Waste Management Branch. Since 1977, we have been working on a project that would provide a modern refuse-to-steam plant so that residential trash would be burned and its heat value recovered as a more efficient method of disposal for our communities. An early finding was that the average outlay for DISPOSAL was 10% of the total Solid Waste Management budget, with HAULING costing 20% and COLLECTION using 70%. Perhaps the reason that municipal officials did not share our sense of urgency about holding down disposal costs was a matter of perspective, and it was up to us to try to think like a Service Director whose range of concern must extend from the curb (again our "C") all the way to the landfill. Thinking more broadly, we realized that there was a stretch still further upstream that influences the flow which is the whole realm of consumer decisions. Preceding that, there are marketing decisions which flow out from a complex of manufacturing decisions. For years there has been talk about "engineering for the next use," and the example of Owens-Illinois planning to recover PET bottles as feed stock for polyester suit fabrics is a good one. Indeed it helps to consider "post consumer materials" as an alternative to the damning term "waste." One use for this particular flow chart is for thinking about whose decisions affect its contents and amount. The "width" of the stream could be reduced 10%, for

example, if we adopt a Mandatory Refund Value system for beverage cans and bottles, on the assumption that Cuyahoga County is much the same as Detroit, in population density, ethnic composition, cultural biases, etc. Detroit observed a 10% reduction in the volume of their residential waste once Michigan adopted their Bottle Bill. A recession also shrinks the stream, of course. What does not seem to influence the amount that gets thrown away is the exponentially rising costs of disposal! (It can be pointed out that Figure 2 is really an aerial view of Figure 1.)

We have considered the costs on the Knox Curve, in dollars and in units of energy. What happens with the passage of time? Figure 3 depicts the core of the discussion about when to shift from a land-fill disposal system to new incinerator technology. The exponential curve represents the annual increase in the "tipping fees" at local landfills. The flat line represents the costs for paying debt service, operation and maintenance for a Trash Burner, such as is projected for Cleveland. The interest on the construction bonds would be flat for twenty years. The costs of operation and

Figure 3. Incineration Vs. Landfills.



maintenance would increase, but would be counterbalanced by the increased income to be realized by selling the steam produced by burning the trash. The 90% reduction in bulk, from residential solid waste to the ash residue, holds down landfill costs. With time, the increasing viability of material's recycling opportunities will serve to keep certain components from entering the waste stream at the same time that increasing numbers of communities abandon the landfill option. This deceptively simple sketch is most useful, however, in raising the question of "when." When will the line cross the curve? What City Council is ready to vote to pay a higher cost today so as to avoid paying geometrically rising costs in the future?

Figure 4. Geographical Distribution of Households.

The final figure is included to stress the necessity for including the geography in designing any trash control system. Along with concentration and dispersal, mixing and sorting, purity and contamination, value and liability, convenience and frugality, responsibility and littering, the factor of "where" must be included in our planning. Asking it another way, "what is worth doing?" Once I got an appeal from a group in Richfield Township who had lovingly

accumulated a ton or so of empty glass bottles. They wanted to have the National Guard send a truck to haul their treasure to Mount Vernon where there is a glass factory that will use old glass to make new bottles. The transportation leg which isn't obvious in the Knox Curve, still must be considered in any feasibility analysis. At every stage there is probably some generation of waste materials (are they hazardous, perhaps?) and certainly the production of heat. The more the economy grows the faster we are warming up interstellar space. The efficiencies that we seek are usually found in correspondence with population densities. Refer to Pete Clapham's study where he discusses the possibility that two neighbor communities should combine in setting up a recycling center. Figure 4 shows two large cities, a number of small towns, and some scattered rural households. The "solution" to solid waste management will be different for each of these conditions.

These four pictures have been offered as tools for thinking more deeply into garbage. They help illustrate materials flow, the need to consider a hierarchy of better and worse choices, the dependence of value upon geography, upon purity, and upon a sequence of decisions, upstream, that are not influenced by the downstream costs.

One application of the Knox Curve, and these related arguments, was made in comments on an EPA proposal, years ago. Someone had thought about the possibility of having a "product charge," to be collected at the time of purchase (our point P in Figure 1) which would represent the "disposal cost" for that particular object. (I seem to remember that it costs the City of New York $37.50 to collect, haul and bury a single copy of the Sunday Times). The money collected would then be used to pay for municipal trash disposal. The idealism is clear; a system where consumers would be forced to think twice about the full costs of a purchasing decision. The trouble, as I argued in my comments to EPA, is the lack of any "linkage" between the decision made at P, to buy the gizmo, and the decision at C of which disposal route to select. If you averaged the costs for littering in with the costs for using returnable bottles,

say, the frugal would be subsidizing the self-indulgence of the slobs! Moreover, if the customer believed that he had already "paid for" the disposal he would be likely to select for convenience. Another recommended use of the Knox Curve is to try to work out just what "convenience" really means, in terms of time and energy. An article in the American Scientist, publication of Sigma Xi, in the spring of 1951 applies to this, if you are interested. It suggests, in a discussion of Group Theory approaches, that you are dealing with a cross product time x energy.

As a final worry, what is the effect upon the system of investing large amounts of public money in providing efficient disposal systems, such as these modern mass burn incinerators, upon the upstream generation of trash? More? Less? In 1970, the logo for that first Earth Day was an optimistic squiggle labeled "recycle." In 1983, it doesn't look so simple.

CURBSIDE PICK-UP PROGRAMS
LOUISA OLIVER
HEIGHTS CITIZENS FOR RECYCLING

To go from the general to the very, very specific will require a little bit of change in our mindset, but I am going to talk very specifically about the City of Cleveland Heights and the recycling program we have started.

In 1978, a group of people in Cleveland Heights who were concerned about how much was being thrown away, how much it was costing us in our tax dollars and so on, got together. Over the next three years we worked with the city government and developed a curb side collection for newsprint. This has been in operation now for two years. The system is basically very simple; we have a system of one curb side pick-up a week at each household. The trash-trucks are equipped with racks, or in some cases a space on the fender or the cab, to hold newspaper. The citizens who choose to participate as this is a voluntary program, are asked to tie their newspapers with twine and not put them in brown bags, plastic bags or anything else, put them at the curb side with their regular trash. It can be collected every week. The trash collectors are on one person trucks in our community, so there is just the one person who drives, hops out, picks up the trash, throws it into the trucks, and then picks up the newspaper. Cleveland Heights is equipped with a transfer station which makes it very convenient for us as our buyer has installed two large bins at the transfer station. The newpapers are unloaded there. The trucks dump the trash and continues out on the route. We have one person hired on a part-time basis to unload the trucks and remove any brown bags from the newspapers, get rid of any contaminants and to load bins. Our buyer picks up the bins one at a time whenever they are full and returns empty ones. That is our basic system and it is very, very simple. It is hard to believe it took three years to get that going. It was a new program in our area and it is understandable that the city was not overjoyed to just jump into something without having any idea of whether it was going to work or not.

Basically the "stuff" we went through to get this program off the ground are things we feel are important for any community thinking about starting a municipal recycling system. These steps are what I'd like to address. I'd like to point out at the beginning that I am talking about a municipal system. I am not talking about a voluntary drop-off center nor a privately run system of any kind; this program is run by the City of Cleveland Heights and it is incorporated into our service department.

Before you as a community decide what you are interested in doing, you have to look at what your present system is and how recycling could fit into that system. The main goal is to be as efficient as possible. You do not want any extra costs, because that takes away from your profits or from breaking even. When you are looking at how much your current system is costing you, you have to look at the landfill cost; not only how much it is costing you now but how much it is going to cost over the next five to ten years or even if the landfill is going to be there in five years. It may well not and then you have to think about carting trash a lot further if you are lucky enough to have a place to cart it.

This is our chief reason for examining recycling at this point. Let's think about it now while we have the time, while we have some options and get a good system in place at this stage of the game.

You have to address transportation costs. We dealt with accurate dollars and cents as much as we could: exactly how much we had to pay for every ton that goes into whatever landfill we happen to be using, how much we projected it was going to cost over the next couple of years, including such costs depreciation on the trucks. It is fine to be an environmentalist, I am in my heart, but I learned that you can not do a program like this on good intentions. You have to have a market and you have to have real dollars and cents. That is the only way it is going to work.

If you do not have a market, there is no point in getting started. You do not collect material and then not have a place to sell them. One very important factor is whether you are going to store and then deliver the material to the buyer or whether the buyer is going to give you a bin in which to store it until the buyer picks it up. That makes a big difference in the monetary amount you going to receive per ton.

You also need to assess the interest in the community. Do you think people will participate? In curb side collection it is efficient for people to participate if they wish, because they do not have to store the materials any longer than a week. They do not have to put it into their cars and take it to a drop-off center. They do not have to remember what day it is to be picked up or what day the place is open where they can take the newspapers. All they have to do is know what day their trash is collected. You can capitalize on citizen interest because they are more likely to be interested if they are able to participate easily.

We found a lot of interest in recycling in Cleveland Heights. There had been some recycling in the early 70's but it had dropped off because volunteers had moved away or become tired. So, there was no recycling being done but there was a lot of interest. We had five or six paper drives over a three-year period to get this project underway. Our citizens ran these paper drives at the pavilion in Cleveland Heights. With each paper drive we got more papers. Each time a person came through to drop off their papers we told them that we were trying to get Cleveland Heights to start a program. By the second year we were having these drives people would ask when the program would be started. We really developed a lot of interest in that way and we were able to gauge the numbers of people. We were getting 300 people in a weekend. We also did a phone poll which showed that 90 percent of randomly selected people were willing to participate in a curb side collection. We knew that was a soft figure but it did indicate that people were philosophically interested.

At this point, we can say that 45 percent of the population of Cleveland Heights has participated at one point or another, and I think that is a fairly safe assumption. Half of what a phone poll will indicate is a fairly good estimate. Obviously a lot of people do not follow through.

If you do not have the support of your city council and the Director of Public Works, nothing is going to get off the ground. We have had extremely good cooperation from our Director. The city administration was helpful in getting us started. Our group is no longer really involved in the program; we did the research involved to get it started, we had contacts all over the country with recyclers, and we helped the city apply for a grant. At this point it is totally under city control and we are not involved in it.

Talk to people who have run successful programs elsewhere; this is very, very helpful. We had a service director from Madision, Wisconsin who had been through the same type of situation come in during the feasibility study. Here was a person who does the same thing all day, every day and we could talk to him and ask about problems we will likely go through. He could tell us what happened; what things to watch out for.

Obviously, you need to have a feasibility study. We had two studies done in Cleveland Heights with the support of the George Gund Foundation. In addition, the first two years of the program were supported by the Gund Foundation. Using the facts you gather assess your city and likely participation. How many apartment buildings are in your community, do you have mostly single homes, do you have duplexes? Do people stay in town or do people go to a community elsewhere for shopping? These types of factors are going to determine what kind of participation you are likely to get. Socio-economic levels are important. Based upon these things, you consider the options.

We decided that in Cleveland Heights a curbside pick up would work best, and it has been quite successful. In the beginning you need a big blitz of publicity to let people know what is going on and obviously you spend more on that in the first year than you do later on; however, it is important that you keep up publicity on an effort like this. If you have a big blitz only in the first six months, the next thing you know people are saying "Gee, do you suppose they are still recycling in Cleveland Heights?" You have to let people know what is happening continually. We found that a mass mailing is very effective. We have had ads in the paper; a cute little pixie girl with a newspaper hat, saying "Remember to put your papers out" and telling people through the winter they can put papers out, just cover them up with your trash bags. Whatever we did kept our program in front of the public. Publicity is one of the big start off costs.

You have many initial capital expenses you need to consider. Costs will be large at first, later you have maintenance costs, truck depreciation, and so on, but that is near the beginning costs. We are fortunate for having the availability of funding from the Office of Litter Control. This is an opportunity which I do not think many states have. I would like to point you in the direction of thinking about using the funds that are available over the next few years to plan a program that will be self supporting later on. When the funds are no longer available you may find that you are still picking up litter; litter will still be there and it will still need to be cleaned up. If we use some of these funds now to plan what to do with litter as well as part of the waste stream from the household, you may be able then to have an on-going, self-supporting system or at least a break-even system of recycling.

It helps to view recycling as a long term investment, not just to think of what it is doing for us right now. Obviously trucks with a lower percentage of waste to take to the landfill will be making fewer trips, so in the long run, there will be less depreciation on trucks, and you will not have to pay for the extra tonnage at the

landfill. We get paid for the newspaper as well so it is extremely valuable in cutting costs of our disposal system.

One of the first things we discovered in talking with other communities about getting recycling programs started is that buyers are willing to work with you on terms of a floor price contract. It is extremely beneficial for both sides and I would recommend that if you are going into any kind of long term situation the way we have, it protects both the buyer and the seller. We had to reactiviate our floor price because the price of paper dropped very soon after we began our program, but we are still getting a good price per ton from our buyer. It gives us security to know that we have someplace to take our paper. In addition we are assuring our buyer of a large, constant supply of newspaper, something he can count on, so it works out very nicely. Another important point; try your best to integrate the pick up into the regular trash collection.

As Ellen mentioned, collection costs are 70% of what a city pays for solid waste disposal. We think about how much it costs to dump, but the collection cost is really your largest expense. If you do not have to raise these costs by having an extra truck or extra pick ups it saves money.

Finally, anti-scavenger legislation is needed. We found this was important. We had to get the word out to the entrepreneurs who pick up the paper off the street corner. It is all nicely tied up and everybody knows that on Wednesday you may well have somebody come along in a truck ahead of the city collection service and pick up the papers. So we did have an ordinance passed in Cleveland Heights stating trash, once it is out on the street corner, is property of the city. We did have a couple of arrests and since then, although there have been a couple of incidents recently, it has not been a major problem. We found that was an effective way to deal with the problem.

PETE CLAPHAM
DEPARTMENT OF GEOLOGICAL SCIENCES
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I want to address the basic question of how communities that aren't dealing with recycling, begin to do so. It sounds like a very simple question; obviously it is not, since if it were a simple matter we would be doing it. I would like to suggest several reasons it is not a simple question and then get into some of the things we are trying to do to simplify it. One of the biggest problems is perspective, as Louisa made very clear. Recycling involves a market where commodities come from a municipality and go to a buyer. They use them because they're already plugged into the recycling system. And there is a real problem here because the communities tend not to view waste aluminum, glass, or newspapers as commodities. They view them as garbage. Garbage is of absolutely no interest to a recycler, as I think will become eminently clear this afternoon.

Nobody is going to buy garbage. That's why you have to pay so much to get rid of it. A city must be able to produce a commodity that has enough value that somebody is going to buy it. That is one of the reasons this meeting is called a handshaking session. It comes from computer jargon. Imagine how you shake hands with somebody. The initiator holds the thumb straight up, the acceptor has fingers off to the side so the hands fit. If both of us had our thumbs the same way, the hands wouldn't fit. That is not a trivial thing. You have to be able to interact with the person with whom you are interacting in order to make the market work. The market involves a chain made up of different people. And the people involved in this chain tend to have very different perspectives on what it is they are talking about. Whether we start with garbage or with litter, we are talking about solid waste, some of which has value but much of which does not. What has been made very clear in many places around the world is that the easiest and cheapest and most expeditious way to realize the value in garbage, at least as far as recyclables within that solid waste stream, is to have people separate it in their homes and make it easy to be recycled through

the market. Now there are many ways in which things in the sold waste stream can be recycled. The city can be involved, as in Cleveland Heights, there are private non-profit organizations, and commercial recyclers as buyback centers, or donation centers. All of these have appeared in the Cleveland area, and elsewhere around the country. But the question is which of these options is most reasonable for a particular city, and how does a city develop a suitable recycling program.

As residents or officials of a particular city, we want to improve the efficiency of our solid waste management, whether that solid waste stream begins as litter or as municipal refuse. How do we use recycling to decrease cost, make it more efficient, extend the life of our landfills, and ultimately discharge our responsibilities to our citizens? That's really what it is all about. The logic I want to suggest here is that the flow of recyclable commodities is from the municipality to the recycling industries. I want to concentrate on the municipal role and the role of citizens in making recycling possible. Now we have many different options for recycling. There are three critical places within the solid waste stream. The first one is the curb. This is where the garbage bags actually end up. For some of our communities the curb is in the back yard but we will still call it the curb in our reference. The second is a transfer station which some communities have but many do not. A transfer station represents opportunities to a recycling program, but it is not critical. For example, I know of one community in Cuyahoga County that was very interested in adopting a Cleveland Heights type of newspaper system but felt they couldn't because they did not have a transfer station. They gave up on the idea even though there were alternatives that they could have used. The third place is the disposal site, which right now means a sanitary landfill. These three places define changes in responsibility. At the curb, the responsibility for solid waste management changes from the homeowner to the city. At the transfer station, it changes from the garbage collector to the organization which comes in and operates the transfer station. At the landfill, the responsibility changes to the

operator of the landfill. Recycling affects these changes in responsibility. For example, who is going to take the stuff to the buyer? Is that going to be the homeowner? If that is the case then you are talking about a recycling center or a buyback center. Does the responsibility get delegated by the city to somebody else, such as a non-profit recycling organization? An example would be West Boulevard Neighborhood Association becoming licensed to pick up in place of the city. This is quite a common thing around the country. A commercial recycler could do the same thing. The city can retain responsibility as it did in Cleveland Heights and pickup recyclable material along with refuse. It could be collected by a separate truck on the same day, a separate truck on a different day but the same frequency, or once a month, or other similar arrangements. Already you are considering many fundamental options that do not involve any collection technologies, or any mixtures of commodities.

Let's get more specific. What will you ask your citizens to do if you represent a city that wants to get involved in recycling? We will assume that you are willing to deal with the questions of who is going to have responsibility for what, and what are the city's responsibilities for organizing the publicity, the pick-up, the scheduling, anti-scavenger legislation, and so forth. What are you going to ask your citizens to do? In Cleveland Heights, as Louisa pointed out, citizens were asked to tie up their newspapers. That seems like a very simple thing. Yet, I have jogged around the block on numerous occasions and seen a lot of people consistently putting their newspapers in brown paper bags. There is a reason for requesting newspaper bundles tied rather than in paper bags. Brown paper is different from newspaper and it does in fact reduce the value of newspaper to the person who is buying it. If it reduces the value to the person who is buying it, they are going to pass on that value reduction to the city. These are little things which may not seem like very much, but they represent the city's only chance to maintain commodity standards. Recyclable materials are commodities not garbage. If they are going to be treated like commodities, one must be serious about it.

One of the tremendously important things about a municipal operation or a large volunteer operation is that you get to a level where the person you are dealing with--your market--can view you as a stable, dependable source of supply. Recyclables are something your market wants and markets will take seriously a city that says, "We can generate ten tons per month of this stuff because we have the capacity to do it, and we can assure you that it is going to meet certain commodity standards." For a city to be able to ensure volume and commodity standards is not simple; it is very different from the routine in private industry--we need to recognize that. For example, how many commodities can you ask people to separate?

Nearly all recycling programs in the United States today includes newspaper. Despite the fact that this market hasn't been terribly good in the last few years, it is still one of the most dependable. Newspaper has many different uses, and it has certain characteristics that lead it to be the first commodity involved in a recycling operation. Another possiblity is to collect newspapers in containers. You collect them as containers then let your market separate them, as is done in certain places. You can have newspapers, glass, steel, aluminum, etc. all collected separately. You may want to subdivide even these into higher-value materials like brown glass, flint (clear) glass, and green glass. The more separated you get, the higher the value of the commodity because the easier it is to reuse.

These are decisions that have to be made by the city, because you cannot talk about a recycling program until you can specify your materials. How clean do your recyclables have to be? Once again, you are not talking about garbage but about a commodity. A clean glass bottle is much more useful than glass which is full of garbage.

The planning process requires you to specify the standards you want to meet. But what standards can you reasonably expect from your community? Some communities may be able to maintain higher standards than others. Some kinds of operations may be able to maintain higher

standards than others. Say, for example, you have a buyback center (a place where the consumer is paid for material by weight.) The buyback center is going to be able to maintain considerably higher standards than a curbside operation simply because somebody there will say, "Hey, we are not going to pay for dirt. Clean it up." On the other hand, the garbage collector will not inspect and refuse marginal material. How many commodities can you handle? Louisa's description of the Cleveland Heights program is instructive. They are relatively small trucks and there is room for one rack. It is easy to collect newspapers with that kind of set up; it would be much more difficult to do glass and cans. Because Cleveland Heights' trucks have side access to the packer compartment, we cannot use trailers pulled along behind the truck. This has been successful in many communities. The traffic pattern of a standard rear-loading garbage truck means that there is very little extra work to fill a trailer behind a packer truck. We precluded that option by having one-man side-loader trucks. How many commodities can you handle, and how are you going to do it? You may have an integrated programin which some commodities are picked up at curbside and then taken to the transfer station or recycling center. Other things could be accepted at this recycling center or transfer station which are not picked up at curbside. This is common in certain parts of the country. One or two commodities are collected at curbside but half a dozen other items are taken at the center.

I don't think I need to say anything about what kind of contract you have with your market because Louisa has already covered this topic. Cleveland Heights, has a population of around 57,000 people. That is a large enough city that we can manage the newspaper program alone. Many smaller cities probably couldn't; or if they did want to pick up recyclables they would not be able to assure their buyer enough material and so they are going to need to cooperate with other cities. How can that cooperation be brought about? It may be that cities could cooperate on a city-city basis; it may be two cities will have to arrange for some kind of a nonprofit intermediary to service both cities so that neither city sees the other as being

dominant. This sounds like a political game and it is, to a degree. But it is the kind of political game which makes cooperation possible, and there is nothing wrong with that. We have done it in school districts; why can't we do it in recycling?

If you do have a nonprofit organization involved, what is the city's relationship to that nonprofit organization and what is the relationship of that nonprofit organization to the people that it is, in turn, selling to? One problem that has come up in other parts of the country is that the existing profit making, taxpaying recycling industry feels that the nonprofit, community-oriented recycling industry is in unfair competition with it. We need to be aware of this. I think we also need to be aware that the interests of city correspond, to a large degree,with the interests of the recycling industry. But we need to develop a way of communicating with each other and "hand shaking" so that we don't need to think in terms of competition. We need to think in terms of how to expand the perspectives of both sides to be part of a recycling system and whether a practical recycling system needs to involve other actors, like nonprofit recycling organizations. How can we build a system that benefits everybody? There is absolutely no reason why anybody has to feel that municipal recycling is going to compete with the private sector. Cities need to recycle to lower their service bills and save on tax money. The issue is saving tax money and using those funds more efficiently. A responsible approach to a solid waste management plan should not damage the private sector, although we may have to be a little bit more sensitive to the legitimate needs of the private sector than a lot of people have been.

One of the practical problems in initiating a municipal recycling program is that when you begin to point out the various options--such as recycling center, buyback center, trailers, racks, private hauler, curbside pickup, etc.--you end up dealing with so many different options that it becomes extremely confusing. e basic problem is not as simple as "How do you improve recycling?" Few cities really understand recycling, and most people outside of city

government do not understand the way city governments work, especially the arcane complexities of public service departments.

The private recycling industry does not always understand what a city really needs (sometimes cities themselves may not understand what they really need). What kind of recycling systems can really meet the needs of the city? These needs include image, budgeting needs and so on. The plan should save the city money, and generate enough quantities of recyclable commodities that private industry will be encouraged to work with the city. I remember talking with some cities about this last year and feeling very frustrated as I drove away. Like all outsiders, I had had a preconceived notion of what the city needed when I went to talk with them. But their perception of their needs were not only different from my preconceived notions but also they required hard numbers that I couldn't give them off the top of my head.

It has become apparent that one thing which would be very useful in helping cities target what would really work for them would be a planning tool that could generate at least first approximations of the hard numbers and a feeling of the implications of various options. So the Office of Litter Control has arranged with Cleveland State University to devise a planning tool which will help cities to plan suitable recycling programs. This tool will be a computer-based model. It takes information on the basic characteristics of the city and also some rules of thumb for general data. The computer will calculate the key characteristics of the municipal solid waste stream, especially as they relate to the recyclable components of that solid waste stream.

We will then have a huge matrix of recycling options, including different sorts recycling or buyback centers, newspaper pickup using racks, newspaper pickup using trailers, multi-material pickup in separate trucks, etc. We will go through and calculate the implications of each of these for costs, likely participation rates, etc. The options considered will include single versus multi-material,

different ways of organizing a recycling program (e.g. municipal pickup, buyback center, private nonprofit pickup), different ways of different handling techniques such as separate trucks, racks, and trailers. The model will analyze the different recycling options applied to the specified solid waste situation in the municipality. It will then rank all options and indicate the ten most feasible approaches for the city. It will also print out a report which describes the options in printed detail along with the implications of these options. The goal of this is to provide a basis for the city to begin planning; to provide enough information about the feasible options that a service director, mayor, council or interested environmentalists within the community will have a place to begin.

This is certainly not intended as the "be all" and the "end all" of recycling planning. It is intended as a place to begin so that people can develop common languages. One of the things that I am looking for is communities who are interested in experimenting with this project. I would like to get a number of communities of various sizes with different collection systems. The purpose in all of this is to devise a planning tool whereby communities can begin thinking about recycling with an understanding of the kinds of things that Louisa was describing for Cleveland Heights. Communities can then go through these steps much more rapidly than Cleveland Heights in planning their newspaper program. It is our hope the Gund Foundation and the Office of Litter Control will be able to look at the planning process in the State of Ohio and say, "Uh, huh. We have made a difference. People are getting value for their money."

Q: Ellen has always been interested in source reduction; it seems to be a philosophy very much like the kinds of things with which we have to deal. Is the Office of Litter Control concerned? Is there something we can do about source reduction?

A: Dave Ross, OLC: I could briefly answer that. The law makes no provision at all for us to address source reduction. So regardless whether or not we think it is a good thing to do, you should realize that if we were to address that, it would cause another issue to arise and make one more matter that we would have to address politically.

A: Ellen Knox: I do know that in Ohio, the law covered in Senate Bill 269 which controls hazardous waste has many similarities for society's general waste management. There is a stipulation " the state shall set up a task force to work on source reduction and waste elimination programs." Now I suppose this suggestion, gone to legislators, would be put in similar language for solid waste, except that it was handed over to EPA rather than ODNR and that is a problem in itself.

Q: Sargeant Betley, I was just wondering how you work with your health department since some of the statutes you cite come from the Department of Health?

A: Sargeant Betley: We receive referrals from and we work with our health department. If e have a vacant lot on which litter has been dumped and it has not been cleaned by the perpetrator, we defer to the health department and the health department does a title search on the property. The codified ordinances of the City of Cleveland call for the owner of the property to clean the property or be billed three times whatever it costs the City of Cleveland to clean it.

Q: Dr. Clapham is there an "optimum" size for your plan? Does the computer program only show in relative size?

A: Pete Clapham: You know whenever you talk about optimum size, you re almost invariably dealing with a red herring. I think there is a minimum size, and I calculated that when I was writing the paper in your folder. It gives the rule of thumb for minimum size. What precisely is the minimum size is going to depend on the kind of technology you use, because minimum size is going to depend more on your market than on your generation. It is the minimum size at which your handling and marketing ability is going to pay for itself rather than on the amount of garbage you generate that you can recycle.

Now on the maximum size, this limits your optimum. There are many reasons that communities get too big. Some of these are political and jurisdictional. This is not the kind of thing on which youcan hang hard numbers. On the other hand, if you get a large community such as the City of Cleveland, you are going to have different things being done in different places. For example, I know the City of Cleveland used to have and I believe still does, three districts of the city in which solid wastes are handled in rather different ways. There is no reason at all why the service department of a very large city like Cleveland, Columbus, Toledo or Cincinnati could not say, "Ok, we are going to work on a district basis. We may even have different sized districts for recycling of the refuse." So they handle the question of optimum by themselves. I think the concept of minimum is very important because that is going to determine whether your market is able and willing to deal with you. The question of "optimum" is something over which you have lot of control.

Q: Do any of you on the panel know of communities where they have been successful in community recycling dealing in more than one product/commodity? If so, have they started these products simultaneously and then expanded?

A: Pete Clapham: A successful, large-scale recycling effort almost invariably will start small, but not necessarily with just one thing. One system in California began as a recycling center that accepted several different commodities. At the center, they have expanded the number of commodities and gone to curbside pickup for a few of the commodities. That was the way they expanded. There are other programs which have started with curbside pickup with one commodity and then over time added others. This hopefully will be what Cleveland Heights does. There are a number of programs in New Jersey and Connecticut that have done that. There is no special place that you should begin if you want to recycle a large percentage of solid waste, but almost invariably you will begin smaller and then expand. I should mention an interesting number that has not come out here; if you look at the total municipal solid waste load, the easily recyclable proportion of that is about one quarter. I am talking about paper, glass, cans and the tremendous amount of material which is potentially recyclable. If you want to go to more exotic technologies, some of which we will hear this afternoon that deal with plastics or with yard wastes, you can push this percentage up quite a lot further. When we talk about multiple pickups or complex recycling operations, even if they begin small we are talking about quite a large percentage of the total amount of solid waste we generate.

Q: Louisa touched briefly on encouraging citizen participation and I was wondering if she or anyone else had any additional ideas on increasing citizen awareness and participation.

A: Louisa Oliver: I must say that is the problem we are continually thinking and concerned about and working on. One of our "achieved" concerns as a citizens' group has been to work through the school system, with scouting, and similar programs with children because we feel that if they get their minds turned on to the idea at a young age, when they get older they will not be so into the "out-of-sight, out-of-mind mentality" that many of us have developed. An educational program is very good and as I say, continued publicity of all kinds is the best we can do.

A: Ellen Knox: There is the possibility of mandatory separation. There is a good deal of literature available on this. In Scarsdale, New York, if your trash is not separated properly, they will not pick it up. This seems to get the message across very rapidly.

A: Pete Clapham: One group which has been educated in Cleveland Heights happens to be the City Council. At least they have been educated superficially, because if you look at the pamphlets and fliers that go out at election time, all of them are very happy to say how involved they have been with recycling effort and how much they support it. It is very interesting, but this is almost the common denominator at election time; the police, fire, and garbage except that it is the recycling side of garbage. To paraphrase ex-Governor Rhodes' favorite saying, "Garbage is not a dirty word in Cleveland Heights." What this does, with not nearly as much efficiency as one would like, is to make it possible to demand action from City Council. Generally they don't concede to those demands, but the time will come when people ask, "Well, why didn't you do this," and it is going to be very interesting because all of the politicians are on record as supporting recycling efforts.

GOALS OF THE OFFICE OF LITTER CONTROL

DAVID ROSS, ADMINISTRATOR, TECHNICAL ASSISTANCE
OFFICE OF LITTER CONTROL, OHIO DEPARTMENT OF NATURAL RESOURCES

I see a number of faces here that are familiar to me. Would those of you who have received, either in the past or presently, a grant from the Office of Litter Control (OLC), raise your hand. That is a pretty good proportion. Would those of you who are going to receive a grant from the OLC, raise your hands; a few more. I certainly hope that is true.

There are several things that the Office of Litter Control is doing that might be of interest to you. Let's start with the most fundamental then. Our program has been in existance for two years now. Those of you who have been in Ohio for three or more years know that in 1979 there was a proposition presented before the Ohio people that would require a deposit on beverage containers. There was a lot of hullabaloo about it and the voters voted it to defeat by approximately 2 to 1. Now it is believed that part of the reason for that defeat was that industries and businesses, the people who wanted the defeat, would propose to the general assembly a law the general assembly would enact as an alternative to the bottle bill. A better, comprehensive law, the law that created our office was enacted. I should point out though, that it is still being argued as to whether or not this is "tit-for-tat." Whether we are doing the same thing that a bottle bill would do or whether we are doing some other things better than it would. I doubt there is a mind in Ohio that has changed over the last two years regarding whether or not we are the appropriate alternative to the bottle bill.

I want to tell you a story. This is the only story I know that links bottle bills, litter control, recycling and me. Approximately three months ago, I was given a duty by the Chief of the Office. We now have a different chief, but I do not think it is for this reason. The Chief indicated to me that I was to make a presentation before the statewide annual meeting of the Soil and Water Conservation Districts. Every county has a Soil and Water Conservation District

and every District has a Board of Supervisors who do things that relate to soil and water conservation. At the annual meeting they consider resolutions that as a body they would want the General Assembly and the Soil Conservation Service to do or not to do. It is a fairly common thing. The resolution I was to be addressing before this body was proposed in two parts. The first, was that a particular soil and water district in Southwest Ohio proposed that the OLC ought to sponsor a non-profit recycling center in every county. Secondly, it was proposed by this soil and water district that there should be a bottle bill requiring a 10¢ deposit on every beverage container. Simple enough. It was explained to me it was my understanding that I was going to have about 15 minutes in which to address this.

I prepared myself and I went to the meeting. I have worked with agricultural people, rural people, and farmers before and it is not a body I am particularly unfamiliar with. Here they were, approximately 400 people in a very large meeting room. Looking at the schedule of the resolutions that were to be considered, I saw that mine was going to occur pretty late. I had an hour, an hour and a half wait. So I settled myself down quite comfortably to see how this was going to proceed.

I noticed something that surprised me considerably, the maximum amount of time that was given to any individual to address one of these resolutions was in the order of 90 seconds. "Good," I said to myself, " I have 90 seconds to tell all about our program and to convince these people that what they ought to do is look carefully at what we are doing." I have never in the course of my public speaking or school teaching written as many notes as I did in that hour and a half. I decided I was going to say A, B, C, and D; then I would cross out C and replace it with X and then would cross that out. For about an hour and a half I worked on this. Finally, it was my turn.

As soon as this resolution came before the body and was read by the chairperson of the group, 200 people woke up, 100 people stopped talking to their neighbors and everyone's eyes were up front. I knew

I was in for it. In less than three minutes, I gave it the best shot I had. I said things like "We've performed a litter study and we know that beverage containers constitute only 30% of the randomly dispersed litter along Ohio's 115,000 miles of roadway." Seems straightforward enough. I said a few other things and I sat down. Eyes lit up, faces got red, hands flew up, and I was crucified. I was keel-hauled and I was quartered, one quarter at a time. Everything I said was entirely irrelevant to what they wanted to say; each of them had a personal experience which was of course, a kind of universal experience. "Driving between my home and work, I see litter" and so on. It was not less than 10 minutes of debate; more time than had been given to any three resolutions.

Well, it convinced me that number one, we haven't addressed this problem before agricultural groups as much as we have in the past. It also underscored the major lesson we have learned in the OLC. We are dealing with really two things. We are dealing with realilties when it comes to litter and litter control and we are dealing with perceptions. They both exist and they are both acting in every community in Ohio that considers the problem at all. They must both be addressed.

Perhaps the most important thing I can tell you is something that shows how I misread this group. At every table there are two sheets that show the amounts of grants that we have awarded for this year, 1983. I thought, at the most, 25 people were all that were going to be here today. I am delighted to see more attending.

For 1983, we have given essentially four kinds of grants. Program Development Grants provide communities with up to $30,000 to do minor types of activities in their communities and to plan for two-year, three-year, or longer programs. We have several communities in program development right now. Program Implementation Grants are awarded to communities that are into the "heart" of their program and these can be awarded as long as three or four years depending upon the track record of that community's implementation program. There are a couple of State Agency Grants which are very specialized.

We announced, last Friday, the single project grants; these are grants that go for a single purpose in a community. A community might not feel it wants to develop a comprehensive program that considers several types of matters or activities. Approximately 1.5 million dollars will be given for recycling.

With respect to recycling, communities that are currently recycling are doing about everything that you can imagine. When we talk to people who decide that they want to get into recycling in their community, we tell them that there is no book that I can give them, no formula that I know that they can adopt to their community. It is simply a case of looking at conditions, finding out who is going to support the program, doing such basic kinds of research and then starting planning. One of the keys might be knowing that along the way you should build flexibility into the program. There is no formula way of developing recycling in communities that guarantee success.

The amount of $1.5 million for recycling this year exceeds the amounts that we have awarded in the last two years. In 1981, we awarded $214,000 and in 1982, approximately $647,000. I am frequently asked by people about our long term objectives or our long term goal in recycling. Where do we want to be, how many community recycling programs will there be and how much recycling do we want to see going on? I must confess that I usually have no good answer for those questions. If we had $10 million to put in recycling in the manner that we are allowed by law to do right now, I doubt very much whether or not we would be awarding much more than we are presently. The keys to recycling depend upon what can be done at the community level.

I like to think that this is not a state program but a group of community programs. We are here to provide communities with the wherewithal, some dollars, some information, and some resources with which they can develop their own community programs, be it recycling,

or litter control. Any successful community program has an individual who is spearheading that program. The individual is probably underpaid and overworked, but that person is going to be very energetic. That person is going to explore new avenues, resources and other kinds of assistance for that community; people around that person are going to be more or less drawn in by the magnetism of that person's program.

To cite one example, a community over the past couple of years involved in litter control; received a grant of over $100,000 to implement comprehensive litter control program. I remember the first time two other people from our office and I went into the field to visit this community. I came out of that meeting very depressed. The person told us throughout the meeting why he could not do this, why he did not do that, and that was pretty much the extent of it. Over the course of a year, having over $100,000 available to them, they spent approximately $25,000. There are things to do though. There are always meaningful kinds of things to be done that can be done in that community or any other.

We are constantly looking for measures of our recycling program. I do not know if there is one good one. What might be a good measure in one community would be an atrocity in another. There are communities that are operating in the red in their recycling programs at the present time. In some cases it very desirable, in other cases, it is alright in the short run. It would be nice if all these programs would operate in the black, it would be nice if they would recycle a large amount of materials and do other things; but perhaps the most important thing to come out of any of these programs is going to be increased public awareness in the community and what they have done to educate the people in that community. That is one of the real benefits. The problem in Ohio regarding recycling is more than just an economic one, more than a technical one, it is a problem of attitudes. It is the attitudes of private citizens, local government officials, and state government officials. If we can understand and get on top of that, perhaps we will be headed to where we want to be in five or six years.

MARKETS: AN OVERVIEW
A PANEL ON INDUSTRY RESOURCES FOR RECYCLING

JOHN MINNS, MANAGER
RECYCLING SYSTEMS, OWENS-ILLINOIS

My name is John Minns, and I am Manager of Recycling Systems for Owens-Illinois. I have been involved in recycling on a full-time basis for our company since 1970. My expertise would be in glass recycling. Bob Bennett, my associate, who was scheduled for the program was unable to be here today. He was going to discuss the recycling of PET (Polyethyline Terephthalite - 2 liter plastic containers) materials. Today I am going to be talking on glass and PET container recycling, and then I want to show you a slide presentation on a multi-material recycling center in Toledo, Ohio.

The glass industry has always recycled broken glass which we call cullet. We purchase cullet from companies such as Bassichis and other cullet companies. In 1970, Owens-Illinois and other glass container manufacturing companies started buying glass from the public across the country. From 1977 through 1982, our tonnage more than doubled. The 1982 tonnage represents only about 7% of our total melt at the present time. In addition, we generate somewhere between 15% and 20% internally, so that if you add the cullet that we purchase on the outside to our in-house cullet, we recycle approximately 20% to 25%. We would like to see this number go up to 50%. In fact, today, some of our furnaces are recycling at a 50% rate, and we can recycle even higher than that. We have had instances where we have recycled at 80% for sustained periods in some of our furnaces. So, we do have a great amount of capacity to recycle large tonnages of glass.

One of the things we have done in Owens-Illinois, and now in the glass industry, to make it easier to recycle is the development of cleaning systems. In the 1970's, when the volunteer recyclers were involved, there were industrial drop boxes, large over-the-road dump trucks, and in some cases, large quantities of glass stored on the

ground. These collection methods were only practical in certain areas. Today, we have the bulk cullet container system. Essentially, it is a corrugated pallet box that will hold approximately one ton of crushed glass. Color-sorted glass can be stored inside, and when there is transportation available, the glass is loaded into the trucks and taken to a glass plant where the containers are dumped. The containers can then be knocked down and reused for several trips. This is one of the systems we are now using, and it has been very successful.

To try to promote glass recycling, Owens-Illinois has initiated an interest-free loan program for recyclers who would like to purchase a glass crusher. These glass crushers cost approximately $2,000-$2,500. The recycler repays the loan through shipments of cullet to Owens-Illinois plants at the rate of $5 a ton. In addition, we have offered free advertising money; $1,000 is available to recyclers who get involved with the loan program. In 1982, we had 153 such programs; and over the next year, we hope to increase this figure to 200.

Additionally, in our glass container plant communities, we have what we call our "bottle bank." Bottle bank is a term that is very popular in Europe for drop-off type recycling. We have adopted the name for what is essentially a roll-off container that our glass container plants send out to local communities for glass collection drives.

One thing that has always been a deterrent to recycling is the fact that you had to remove the metal caps and aluminum rings from the bottles. In the last couple years, Owens-Illinois has been installing cullet processing systems at our plant locations. These systems basically prepare the cullet for introduction into our furnaces by magnetically separating the ferrous metal, screening the good glass from the larger pieces of glass and contaminants, and air classifying aluminum rings. We are hoping to process 300 tons per month in each of these systems.

The following is an example of a recycler's comments after installation of one of these systems, "On behalf of BRING Recycling, Lane County's oldest and largest non-profit recycler, I would like to thank Owens-Illinois for installing equipment which obviates the requirement of removing metal caps, aluminum caps and rings from cullet-bound glass, as glass handling constitutes 65% of our total labor cost. Subsequent to installation of the equipment in question, we have been able to eliminate roughly 35% of that time. Owens-Illinois' actions have been of considerable value to BRING in both the reduction and cost associated with glass handling in the freeing up of time which we can use to generate additional materials. Owens-Illinois' new equipment has done more for BRING than any other government or private sector program to date. We salute you."

This is generally the reaction of recyclers that had been involved with glass in the past when it was necessary to remove metal caps and rings. Great labor savings are derived by elimination of this task.

In the past, glass has normally been a fairly stable commodity. The price has not fluctuated as much as some other commodities. You can see that in 1970 when our program first started, we were paying a penny a pound, or $20 per ton, at our glass container plants. In 1976, our base price went up to $30. Presently, our base price is $40 plus incentives for buy-back programs and for mileage.

One of the other products that Owens-Illinois manufactures is the PET beverage container. This is the topic Bob Bennett was going to discuss with you today. We do not have a primary recycling program in Owens-Illinois for PET containers as we do with glass--where our own glass containers essentially go back into producing new glass containers. PET containers are used for secondary purposes.

Owens-Illinois' PET recycling program is committed to be actively involved in establishing PET recycling through: (1) reviewing recycling process economics--which methods are most possible,

(2) find new high value end-uses, (3) promote the recyclability of PET, and (4) energy resource recovery.

PET is the material used to make the plastic beverage bottle. The base cup is polyethylene and the main body is polystyrene. Some of the applications involved with reprocessing PET include fiber, e.g., twine, rope, filler medium, carpet backing, apparel; industrial textiles; thermoformal sheets, e.g., base cups, packaging, non-food containers; and film and bags.

One of the big users of recycled PET is Wellman Industries, located in South Carolina. They manufacture the polyester fiberfill used in sleeping bags and insulated jackets, and purchase millions of pounds of this material each year.

Chart 1 shows a flow diagram of the dry system for reclaiming the PET materials. The base cup and aluminum caps are separated from the body ground. The body is color-sorted, manually if it isn't sorted in bale form, ground and then air classified.

Chart 2 is a flow diagram for the wet system--the material is ground and air classified before going into a flotation and wash.

Table I shows some of the things to look for to make the bottle more recyclable.

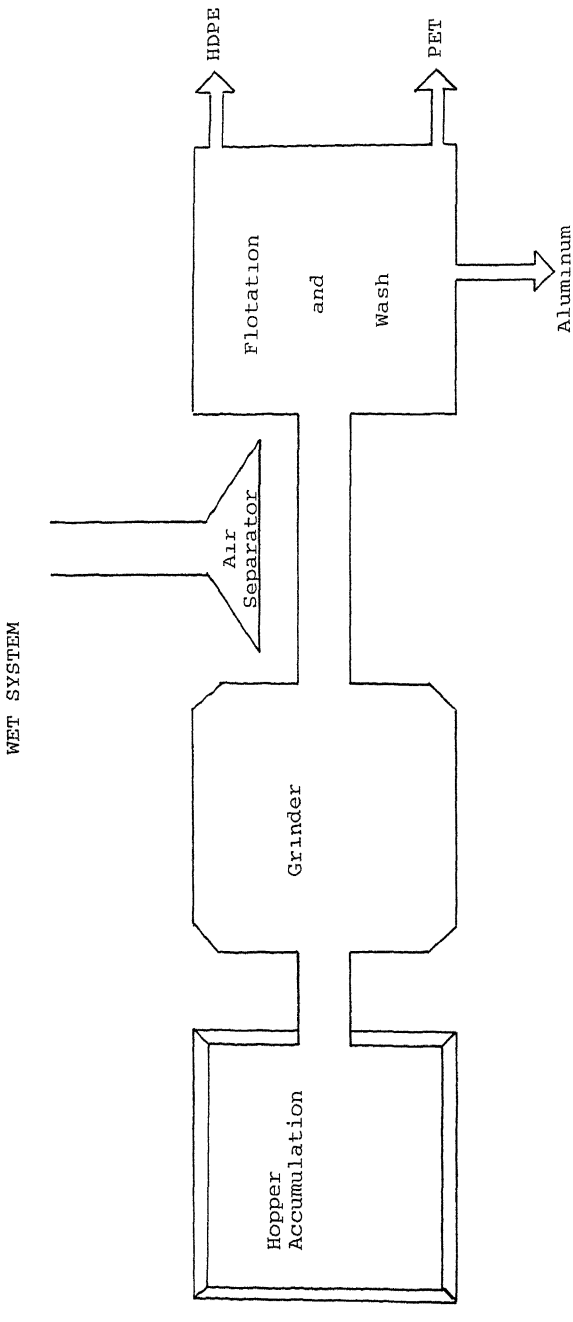
One of the programs that was initiated in 1981, was the multi-material recycling station in Toledo. Materials recycled include glass, PET, aluminum cans, bi-metal cans and newsprint. Owens-Illinois and a local beer wholesaler initiated the program. The beer wholesaler had equipment to recycle aluminum; and O-I wanted to recycle glass and PET materials. We got together and came up with a railroad station theme center. Soon, several other beverage companies and the local newspaper were brought together to form a coalition. Since that time we have received a great deal of publicity.

DRY SYSTEM

PET RECLAMATION SYSTEM

Chart #1

Chart #2



PET
RFCLAMATION
SYSTEM

TABLE I. RECYCLABLE BOTTLE.

Container Parts	Items	Reason
Body	No Coating	Difficult and Costly to Remove
Label	Non-running inks	Stains PET
	Heat Shrink	Eliminate Glue
	Label with Recycle Statement	Promote Recycling
Adhesives	Hot Water Soluble (label & base cups)	Wash Off
	Heat Seal	No Glue on PET
	Leading & Trail Edge Glue Pattern	Minimize Glue on PET
Base Cup	Pop-off Design	No Glue
	HDPE (Initially)	Float Off
Closure	Plastic (Density <1.00)	Float Off

The theme center concept has been quite successful and has been adopted by a large number of communities across the country. Circus, riverboat and western themes have also been used, as well as a heritage theme in Tiffin, Ohio.

The following is a slide presentation on the Toledo Recycling Station. (A 7-1/2 minute audio/visual slide show was given.)

JOHN A. HOCEVAR, CONTROLLER
THE BASSICHIS COMPANY

The Bassichis Company headquartered in Cleveland was founded in about 1900. We are the largest glass recycling organization in the country having eight operating plants. The glass container segment of our business is a small percentage of our overall business. Our strength is the result of having pioneered extensive markets for waste glass by providing an alternative to marketing cullet exclusively to the glass container industry. The major ramification as it relates to public recycling is the fact The Bassichis Company can absorb significant tonnage of mixed colored glass to non glass container related industries. This eliminates the inconvenience and expense of color separation.

There are many markets for glass outside the glass container industry. We deal in soda-lime plate glass with its biggest use in the beaded glass industry. If you drive down a highway at night and feel very comfortable because of the reflective striping, every inch of that striped paint has glass in it. We all use waste glass in our everyday activities; most matches manufactured in this country have powdered glass in the tips providing the abrasion. I could go on and on. The fiberglass industry uses waste glass as does the ceramics industry, and many others. We have been developing different market outlets for many years.

Although The Bassichis Company has primarily been buying glass over the decades from industrial glass sources, it is now pursuing municipal sources of glass as well.

The Bassichis Company has recently announced its willingness to contract with municipalities on a long-term basis for mixed recyclables including glass, all cans and plastics with no segregation whatsoever. Let me just briefly explain our offer.

We are unique in that we do have markets for mixed glass. If you sell to most glass container companies, they will tell you that they want green flint, and brown glass separated. We have markets that take mixed materials; we can make a mixed stream of glass and we can sell it to the abrasives industry or to the fiberglass insulation industry. There are markets where we do not need the degree of processing necessary in the glass container industry.

We are trying to educate mayors to the fact that about 26% of the waste stream is readily recyclable. Municipalities can save on their garbage transportation costs and landfill space by selling that portion of the waste stream, instead of taking it to the landfills.

Revenues generated can benefit the communities in terms of enhancing municipal services and community image. Cities with incinerators would also benefit significantly, as the BTU value of the incineration systems would be enhanced due to the reduction of the percentage of non-burnables. Due to a cleaner burn, waste incineration would be accomplished in less time, reducing labor and extending furnace life. Another benefit, less waste would be entering the landfills, extending landfill life which would tend to stabilize disposal costs in the future.

The thrust of the program is a color-keyed bag designated as a recyclable bag accomodate mixed glass, metal and plastic. This means ferrous metals, non-ferrous metals, flint, emerald, and brown glass can be all mixed. In this manner recycling can be a very simple household routine. The color-keyed bag is yellow and other waste is put into a regular garbage bag in your kitchen. Both bags go to the curbside. This opens the door to cost efficient curbside segregation efforts administered by individual municipalities. The current price for the materials in a mixed state is twenty dollars ($20.00) per net ton FOB The Bassichis Company plant, Cleveland, Ohio.

I am also very pleased to say that we have negotiated a system where the yellow bags can be recycled. They would go into a shredder, be

bailed and returned to the manufacturer of the plastic bag. Typically the recyclable commodities would come into our plant and the municipalities would not be involved at all in the processing of the material. After the recyclables are delivered to us, their involvement ends and ours begin.

The benefits to the municipalities are significant and far-reaching. Municipalities involved in such a program would save garbage transportation and tipping fees at landfill sites due to the fact that a significant portion of the waste stream would now be marketed instead of having to be disposed. A detrimental situation would become a beneficial one as a result of the revenues provided by the marketing of mixed recyclables.

The Bassichis Company feels that the Ohio Department of Natural Resources would be prudent in spending more monies on meaningful municipal recycling efforts as opposed to some of the current trivial "Litter Grants" which generally do not have the long-lasting impact that an on-going municipal recycling program would.

The Bassichis Company hereby thanks the Cooperative Extension Service of The Ohio State University for sponsoring the North Eastern Ohio Litter and Recycling Seminar. It seems that public forums such as these are most beneficial in the exchange of current litter and recycling information.

ANDY WATERS, AREA GENERAL MANAGER
PACKAGING CORPORATION OF AMERICA, RECYCLING DIVISION

Good afternoon ladies and gentlemen. The Packaging Corporation of America is a major integrated company; we own eight different recycling mills throughout the country. We are split in two areas, the east and west. The eastern area is based here in Cleveland and handles approximately 60% of the total tonnage that PCA has. To give you some ideas about us, we have been in business for about 75 years and we are a private company, wholly owned subsidiary of Tenico which is a major oil conglomerate based in Houston, Texas. The recycling mills that we supply reach from coast to coast. The eastern offices handle approximately 50,000 tons of different grades of recycled paper every month.

A lot of people know the different grades, or at least the different basic grades of waste paper that are recycled. But there seems to be a question about what happens to this material once it gets to the mills. What is it used for and why is price fluctuation so extreme? Basically there are about 52 different grades of paper, but you could break that down to 70 or 80 grades. No two pieces of paper are the same. There is everything from mixed paper which for the last two years you were lucky to be able to move, up to the pulp substitute grades like white pie plate cuttings or white envelope trim. That better grade generally moves for a price in the neighborhood of $250 per ton. The base prices of all these grades vary according to the cleanliness of it and the different contaminants in it.

Mixed paper, for instance, is every grade of paper thrown together so that it is totally unseparable. The main use for that grade is roofing material. It goes to different recycling mills and is thrown into what essentially looks like a large kitchen blender where it is mixed with rags and various other grades of paper. It is pulped out and run through our machinery. The reason for that grade being so slow in recent times is that the housing market is nothing to write home about. Also a lot of the roofing manufacturers have

gone to a fiberglass base sheet which seems to have a little bit more durability in the different climates in the country. This fiberglass sheet can be run on the same type of machinery that recycled paper is run on so it does not take a great deal of capital investments to convert the system. So we have seen some change in the mixed market in the last 30 days.

Newspaper is another grade with which I am sure most people are pretty familiar. There are three or four different grades of newspaper. The newspaper is used primarily to be remade into newsprint. Most of the major owners of newspapers throughout the country have, in recent times, bought mills or have built new recycling mills for the expressed purpose of guaranteeing them a supply while controlling their costs. Most of the newsprint prior to this time came out of Canadian mills. There seemed to be an almost annual strike that resulted in increased prices, so three new paper mills have opened up in the last year and a half just to recycle newspaper and convert it back into newsprint. These recycling plants are the major consumers of newspapers.

Newspaper also goes into the manufacturing of folded cartons, cereal boxes, and soap boxes. Any type of gray-back box that you see has some degree of newspaper in it. The cover sheet on the gypsum wallboard also has a lot of newsprint in it.

The last market that has fluctuated drastically in the last few years is insulation. When it first came out in the mid 70's, cellulose insulation was a boon, to say the least, to the recycling industry. The price of newspaper jumped from about $20 per ton to almost $100 per ton at that point. Then in about 60 days, it dropped from $100 per ton to a point where you couldn't give it away. Now it has stabilized a little bit and we do not expect to see those kinds of fluctuations in the future.

The next major grade is corrugated. Again, as with newspaper, most of the corrugated that is recycled goes back into making new

corrugated boxes, either medium or liner board. Some of it is used in roofing as well, and there is also some used in wallboard.

Everything else is simply classified as a high-grade. There are numerous different grades of high grade, but the biggest users of high grade material are tissue manufacturers--the Howard Paper Company and the Scott Paper Company to name a couple. The paper towels you see in your homes probably have a great deal of recycled paper in them.

In general, the paper market for all the different grades fluctuates anywhere from a 30-day period to a one-week period. We are in a time right now where at least three grades have increased dramatically in value in the last ten days. There seem to be increases at this point from the mills on their orders so we are now in the process of looking for additional tonnage of almost everything. I do not know how long the new demand will last. The paper recycling industry is one of the last purely elastic economies in this country. It is a commodity in every sense of the word. What you buy today and pay $150 or $200 per ton for, you may not be able to sell tomorrow.

In closing, we handle all different grades of paper and for the most part consume the material ourselves. We have been in the industry for a great many years and if there is one thing that can be said about it, it is not consistant. Unless you are interested in setting up a recycling program that will generate major amounts of tonnage, you are far better off working with a company that owns recycling mills. That will give you some degree of consistancy on your markets, not necessarily on price, but at least you will be able to move the material in bad times and that is not always easy to do.

KATHRYN A NERO, MANAGER
COMMUNITY RELATIONS
ALCAN ALUMINUM CORPORATION

Alcan stands for Aluminum Company of Canada. You have heard of Alcoa, Aluminum Company of America; well, we are the aluminum company of Canada. At one time, years ago, we were the same company in Canada. Alcoa moved into the states while we stayed in Canada for awhile, but now we are also in the states.

The recycling industry has obviously grown in all areas. We are very interested in recycling aluminum because it requires only 5% of the energy needed to produce aluminum from the ore. So when people say aluminum is a high energy user, in recycling it is not, as we save 95% of the energy we first expended to produce it.

The Aluminum Association created a recycling division in October, 1979. This division is comprised of companies that have traditionally dealt in scrap, those that produce virgin metal and also process scrap, and independent companies such as extruders who melt scrap as a source of metal. There are other groups involved in recycling in all areas; paper, glass and aluminum.

If the aluminum usage in automobile applications continues to grow as anticipated, the source for relatively easily recovered aluminum could make major impacts on the aluminum scrap supply several years from now when these automobiles become available for recycling. So the aluminum industry is looking forward to putting more into the automobiles so that we can get it back into the system again in the future.

The aluminum industry has been recycling metal since 1904 when aluminum recycling plants opened in Chicago and Cleveland. Many Americans learned about aluminum recycling beginning with the aluminum beverage can 20 years ago. Most common to the public is the beverage can recycling; over one million Americans collect aluminum cans on a regular basis with millions more collecting cans part time. Approximately 54% of the aluminum cans made today are recycled.

One of the most important things any concerned industry can do is to increase public awareness; awareness such as we are doing today with recycling of glass, recycling of aluminum and recycling of paper. The aluminum industry has a film that is available on a free loan basis to any interested organization and it can be obtained from me at Alcan Aluminum, 100 Erieview Plaza, Cleveland, OH 44114 or call 216/523-6910. You can use it with various community groups. It is entitled "Recycling: A Way of Life" and it carries the complete story of recycling from the start and back into the system again.

Alcan does not have public recycling centers. You may wonder why I am here then. We do support community groups near our plant locations. As an example, Cedalia, Missouri has a cooperative sheltered workshop. Cedalia, Missouri is also the location for the Missouri State Fair. The sheltered workshop asked if we would be interested in supporting the sheltered workshop in some of their recycling activities. The workshop staff and their employees, about 70 mentally handicapped people, asked if we could support them with company dollars since we do not have a public recycling center. We started by running ads in the local newspaper to announce that the cooperative workshop was having recycling days.

When the Missouri State Fair approached this year, they again came to Alcan and asked if we would get a booth for them. We did. I was surprised to find that the concession stands at the fair had aluminum beverage cans. As a result of their efforts, the workshop was able to collect a total of 4,766 pounds of aluminum which equated to 78% of all the aluminum beverage cans sold that year at the fair! Our support included distributing some magnets. They were little magnets that say "Give a good can another chance." (These are available from us for community groups.) Magnets are very important as I think any of us will tell you in determining whether something is steel or aluminum. So we contributed magnets and brochures.

We have worked with Scouts and other groups in our other locations. We usually tailor our activities and plans for those locations where we do have major plants. Again, although we are not a public recycler, we actively support efforts of those who do recycle.

THE INDEPENDENT RECYLER
MARK BATY, JR., PRESIDENT, GEAUGA RECYCLING

I am going to speak to you about a subject that is seldom discussed at recycling meetings or written about in most periodicals. It is a subject taken for granted, possibly overlooked due to the lack of knowledge that exists among those who work on the theories involved in recycling and those who work for large recyclers in a public relations position. The people most apt to speak or write are not usually involved in the "hands on" area of recycling.

I have worked on both sides of the fence. I have worked as the manager of a major manufacturing company's scrap and salvage operation and I founded and have run my own scrap or recycling business for the past ten years.

Today, in a very brief time, I hope to give those of you involved or hoping to become involved in recycling an opportunity to share in some of the knowledge I have collected in the past 17 or so years.

Most of you will be attempting to start your recycling center against strong odds. There is an established scrap dealer or recycler in your area and he will feel threatened. Here you are using his tax money to start a competing business and he is mad as all get out. How you handle this problem depends on his reputation, his community spirit, your attitude towards him, and whether you plan to work with him or against him. Each situation must be viewed by itself and handled in the best possible manner.

Both major scrap industry organizations have taken strong public stands against government funding of any recycling centers. Members of these organizations who are otherwise rational, community minded citizens, can become incensed when discussing government funded recycling. Geauga Salvage, Inc. does not belong to either of these organizations and believes these views are parochial and antiquated.

I believe it is better to work within the system in an effort to work for a common goal which is beneficial to both the private sector and the government funded recyclers. A recycler who is funded can work on much less volume and on commodities which are unprofitable to a profit-oriented business, but which must be recycled for everyone's benefit.

Let us suppose you have gotten beyond the above first hurdle and are well on your way to establishing your recycling center. Where are you going to locate? Since you are most likely working with a town or other governmental body, they will probably suggest the back of the service department, out by the landfill or over at the old service garage in the bottomland that was abandoned ten years ago. Baloney! Fight for a highly visible location. Visibility is your best business getter. I know whereof I speak; you need a map and a "trip-tik" to find our business. Of course, if you are in a small town where everyone knows everyone else, location need not be of prime importance. Everyone will know by nightfall: "You know that Baty boy, Nellie, I always knew he'd be no account, playing with rubbish down behind the service garage; thinks he's gonna save the world recycling beer cans."

Alright, now we have our problems with our competition solved and we have our location. Let's open the doors and recycle, right? Wrong! What are we going to do with this stuff after it comes in? Hopefully we are going to have some type of ultimate containers to put it in such as a lugger box, rolloff or trailer. No problem, Mrs. Jones will bring in her aluminum cans, flint clear glass, brown glass, and bimetal cans each in their own container and in the hopper they go, right? Wrong again! Mrs. Jones will bring all of them in a garbage bag mixed together. But, you say you won't accept them that way. Fine, but don't expect to see Mrs. Jones again. Educating the public is a long, slow and delicate task. Plan to sort a lot of material and have the equipment to do so. I recommend a large table with a mesh bottom so liquids can flow thru the table. You should have portable containers such as Apex self-dumping hoppers on wheels

and a method of dumping them into your container or processing machinery.

Now we have our material handling equipment, our processing equipment, and our ultimate containers. The only major piece missing is a scale. You say you don't need a scale because everything is donated and there is no need for weighing. Hogwash! Probably the single most important piece of equipment to any recycler (except for his magnet) is his scale. Everything should be weighed coming in and must be weighed going out on your scale. Don't be naive enough to believe your buyer is going to give you honest weights. For many companies the profit is on the scale. And don't think scales cannot be rigged. I do not know of any invented that cannot be. I cannot stress the importance of your own scale too much. If you don't remember another thing I say, remember to get your own scale!

Now you have your location and equipment, but you are still not ready to open. Why? Because you need more knowledge of metals. You know glass, paper, aluminum, bi-metal....But wait. Do you really know aluminum? Sure you know cans and foil, but what about extrusions, siding clip, cast, old sheet, and litho? Do you know how to separate them to get the most money? Do you know how to tell 300 series stainless steeel, zinc die cast, magnesium, and titanium from aluminum? You should. A fellow in the audience today who has worked at recycling for a number of years, recently sold us some copper wire. The problem was that much of it was not copper. It was copper coated wire. He had not checked it with a magnet. Very elementary, but very important. You must know the metals you are working with and have a basic knowledge of all the other common metals. A lack of knowledge cannot only be financially disastrous but can be extremely dangerous or even fatal. Should you buy magnesium turnings thinking you are buying aluminum turnings and someone throws a match or cigarette butt into them you could lose your entire business very quickly. I have seen a beautiful home burn because the owner had some magnesium stored under his swimming pool chemicals in his

attached garage. So you can understand how important it is to have a knowledge of metals before opening your recycling center.

Now you have become knowledgeable in all the above areas you must have a market for your material. In the recycling business it is not "let the buyer beware," but "let the seller beware." Choose to whom you sell very carefully for your choice could mean the difference between success and failure. The size of your purchaser in no way has any bearing on his honesty nor does it reflect how much he will help you in your venture. In fact, my personal belief is that many of the larger buyers did not reach their size by being honest and in helping others. It is also harder to get satisfaction from a large impersonal corporation than from a small company whose president you can call or visit. Case in point: we and three other recyclers in northern Ohio dealt with one of the leading primary aluminum companies several years ago. We were promised the world. We got grief. Today none of us recycles our cans through this company. We, as an example, deal with Bradley Metals, a small secondary smelter in Cleveland. We have never had a problem with these people in ten years. We do, however, give them clean uncontaminated loads, separated and prepared to their specifications.

I strongly urge you to visit those to whom you plan to sell. Talk to other recyclers and ask to whom they sell and if their dealings have been satisfactory. Find out also if your proposed buyer is always in the market. Some buyers, including very large companies, go in and out of the marketplace. When they are out of the marketplace is usually the time you have material pushing out the walls. It is also the time when no company wants to take on a new customer because there is no demand for that particular material. Sometimes it is better to receive less money but know your buyer will always be there when you need him.

Now that you have found the buyers with whom you wish to deal, treat them as you would like to be treated. Know how they want the material separated, how they want material prepared, how it is to be

packaged, whose weight governs, what steps are to be followed in case of a discrepancy, and the method and time of payment.

Now that you have met all the conditions which I have mentioned, you are ready to open. Good luck and happy recycling!

Q: I'd like to know how all the different kinds of cans and jars in the bag are handled by the Bassichis Company.

A: John Hocavar: It is a mixed stream of all bottles, jars, and cans regardless of color, regardless of ferrous versus non-ferrus, and we are including within that 2-liter PET type containers as well. I do want to point out that this is really a novelty. There is one enterprise on the west coast where there is a scrap dealer who is now buying mixed recyclables. I am not sure what the price is, I think it is around $18 to $20 per ton. We mean a bag of mixed recyclables.

Comment: Mark Beatty: One thing I forgot to bring out in my speech, if you do open a recycling center, get a lot of media publicity. All the advertisement you can buy is not as good as one story in a newspaper or one shot on a television program. We found that we put advertisements in the paper for a long time and got very little response to it, but whenever we appeared on television, or whenever we had a newspaper article written about us, it had a tremendous effect on customers.

Q: I'd like to ask Mr. Ross about the new advertising campaign that the Office of Litter Control is contracting.

A: Dave Ross: I don't know a great deal about it other than this: OLC has contracted with the Stern Company in Cleveland to do the media buy and the other things attended with our public awareness, public relations campaign. The first things you will see will be a few spots on TV; you will be hearing some PSA's on radio and I believe seeing some billboards leading into "Clean Up Ohio Day" on April 30. We are hoping that we will be able to do some general public awareness on recycling a bit later in the year. That remains yet to be resolved.

Q: Are there any plans for localizing the coverage?

A: Dave Ross: Generally, I think the answer is "no" regarding the statewide campaign. That is a nearly impossible thing to do with the amount of money we have available to us. A number of communities have approached us and asked whether or not we could localize, whether we could relate our campaign for instance to their date or their activities for Clean Up Ohio Day. That is almost impossible to do. Your question would be better directed to our Public Education Section, they are the ones who manage the publicity.

Q: Mr. Baty had mentioned the danger of not knowing the difference between aluminum and magnesium turnings. From what source would a local recycler even get magnesium?

A: Mark Baty: Many times, machine shops in an area will donate turnings to you because it doesn't pay them with small quantities, to sell them. They may donate this material to you and you may think it is aluminum when it is not.

Q: Mr. Baty, the Lawnboy powermower has a magnesium base, correct?

A: Mark Baty: Yes, many rotary mower lawnmower bases are magnesium. However the fire hazard is not as great when magnesium is in a solid piece. It is when it becomes a turning or a powder that it becomes dangerous. Volkswagen engines are also made out of magnesium.

Q: Is there a safe way to deal with magnesium and any other flammables in your community recycling center?

A: Mark Baty: I suggest you check with your local fire department to see what local ordinances are and ask how they would like you to handle these flammables. They are best put in a room where you have a wall that's available for a "blow out" that is a weak wall that should you have an explosion or a fire pops out. Store them in a room where there are no other flammables, keep them in a sealed container, don't smoke around them, and do not have any torches, welding, or anything of that nature around them.

Q: This is addressed to the Office of Litter Control. I know that the Office is very generous with passing out trash bags to various communities for Clean Up Ohio Day, but is anybody else, any other businesses or industries willing to donate a stronger type of trash bag?

A: Dave Ross: Well, there are certainly stronger bags.

Bag availability varies from community to community; there are a number of people in communities developing Clean Up Ohio Day programs who know how to "touch" the interests of local businesses and industries. Quite frequently these businesses and industries have a will to do something and they might have some money--they simply do not know what to do. If you can get their heads turned in your direction you can tell them what you would like them to do. Tell them, "I would like you to order for us, 10,000 trash bags from this company at this strength and this is the amount it will cost you." Many industries are glad to help. It would require a bit of research to make sure you get the right bag. We do have people who might give you guidance on where to order.

Comment: Kathy Nero: The good heavy-duty bags cost about 40¢ a piece.

Comment: Betsy Gesner, OLC: We have also had people experiment through stream and river cleanups with carrying burlap bags and putting a regular plastic litter bag inside of it. That way it can be drug against the ground, carried more easily, and can carry glass and sharp objects without them breaking the sack. When the bag is full, you take out the "liner" and insert a new one.

Q: One exciting thing I think, was the virtually open ended market that was seemingly laid out here today for glass. Owen-Illinois is talking 50% maybe up to 80% of their process being in recycled glass. Paper, as mentioned earlier, is at a level of 18%. We talked about the undulating price of paper and how it took us on a ride or two and

its sort of a drag on the market now and yet this morning, we talked about how this had been a foundation article for the recycling industry. We looked at the Toledo model where they are de-inking the paper, and The Toledo Blade buying it back and printing next Sunday's edition on it. Mr. Waters, what is the possibility of opening up the newspaper recycling like we seem to be getting with glass. Can we de-ink more of this paper? Can we create new markets? What's in the future for newsprint?

A: Andy Waters: Well in this market area the biggest single factor will probably be known in the coming months. There has been a major mill expansion in Ontario and they have started two new machines in the last year. They have had innumerable amount of problems turning these machines on and then not having enough orders or not getting the quality of paper they want. They had built up a huge inventory in excess of 80,000 tons of paper. They have been able to work most of it off and at this point both machines are on schedule and are running. That consumption of recycled newsprint will be an additional 110,000 tons per year and they should start pulling again in the next two months. In addition, within the last 30 days, Mexico has run their mills completely out of paper and have shut down. They have two machines at one particular mill. One of them has been shut down the last month due strictly to lack of paper. The second one is running hand to mouth. They are pulling newspaper out of this area, but I do not expect that to continue for a long period of time but I do expect it to take enough paper out of the northern part of the country as well as some of the other parts to help with the general overflow that occurs at this time of year. Southeast Paper Company in Dublin, Georgia has been talking about the addition of another machine. They are consuming approximately 17,000 tons per month there. The Southwest Forest Industries is not pulling out of this area but up until 2 years ago they were consuming primarily double line cuttings which is the trim off of new boxes. They have three machines, two of which were converted to de-inking machines; and they are in the process of gearing up and getting enough orders to fill these machines, they are pulling from as far as the middle part of

Missouri. They are pulling from that range has moved Mexico to this area. With Ontario coming on stream I think it is simply a matter of the economy solidifying enough for advertisments to come back into the newspapers to increase their size. Once that happens, which is already starting at this point, I think you can see newspapers coming up in value (they have increased in value this month) and I think for at least the duration of the year there should be some solidity in that. As far as long-term, the consumption will be higher, but whether or not the price stays up is strictly dependent upon how much tonnage is put on the market.

Q: What would you see as the limits for this kind of reuse. Is there any? Where do you think the break is between virgin materials and recycling? Is recycling conceivably cheaper than virgin materials in the future? What price would be the floor price for this kind of use?

A: Andy Waters: For a long time recycling was not necessarily cheaper for the simple matter that there have been government subsidies on a great many of the virgin wood material in the Canadian area in particular. What's happened is that they have finally recognized it did have an effect on the recyclability of paper and the initial cost involved in putting one of these machines on is extremely expensive. You are talking in the neighborhood of $600 million for the two machines in Canada.

Now if the government did assist in a tax break plus some money up front for them, I would say that if I had to forecast for the next four to five years and down the road or even further, there is going to be an increase in demand for recycled because the actual cost of regenerating, or remanufacturing newsprint from recycled paper is cheaper than virgin. The government, as I said, has given enough tax incentives to build these machines and put the cleaning equipment in and that's really the key to it. If you can cover some of the initial investments, the base price on that commodity would stabilize. As I said in the past prices were as low as $5 to $10 per ton

and we do not want it. I feel at this point that the foreseeable future paper ought to be able to move for at least $20 per ton and probably much in excess of that for the next year or so.

Q: We all have problems with tires and we haven't discussed them much at all today.

A: Dave Ross: We do have over in Eastern Ohio, a facility being readied to accept tires. They will be recovering carbon black and also certain oils. It is a little unclear - they are a little bit secretive at the present time although they are supposed to be operational. I think they are probably not yet ready to make a long-term committment for accepting tires of one kind or another from communities, but we are hoping they are going to find a market for their products and in turn are going to be accepting large numbers of tires from people here in Ohio. It is something that a lot of communities have asked us about and if things ever firm up, we will certainly be contacting our grant communities to mention this to them as a lead.

Q: Mr. Waters: How about the market for the plastic-coated paper like magazines and things like that.

A: Andy Waters: Plastic coating is normally referred to as poly-type coating. That is like the coating you find on a milk carton that is 100% waterproof. You can actually peel off the coating. Magazine stock is a clay base, high gloss sheet. There are two problems with magazine stock. First of all, the clay coating has absolutely no value at all whatsoever to a recycling mill. If it is a heavy clay coating it can reach as much as 30% of the weight of the material. If you put that in the pulper, that 30% goes right down the tubes. The second thing is a great deal of magazines have a glued back on them. In most cases it is a hot-melt type of back. When the glue goes into the pulper it comes out the other end in small specks, in some cases not so small, and the finish will not adhere to the boxes. The magazines are a substitute for newsprint when newsprint is in very high demand, when the price gets extremely

high. Most mills can figure out a way to use some of this material. The glued back magazines, are going to continue to present a problem until the market turns around enough for some of the major mills to be able to afford the cleaning equipment. That would be quite some time. The milk-carton stock is being consumed by several different mills at this point. They have a floatation process; when a paper is pulped the plastic floats to the top and that can be skimmed off. At this point there are only two major consuming mills of that grade.

Sulfide based paper or a white-based paper, are a very expensive grade of paper and can be used without further treatment. Now there have been some exotic poly-type coatings on a gray-back sheet and that is essentially worthless because by the time you get the plastic off the paper after you have pulped it, there is not much left of the paper fiber.

Q: Mr. Minns, in developing a community center, how does one go about getting large containers to store the glass?

A: John Minns: The bulk color container system I mentioned in my presentation are generically known as "Gaylords" corrugated containers. They are approximately 36 cubic yards and fit on a 40 x 48 inch pallet. Owens-Illinois does make a carton like that. They can be purchased new from O-I to get started in a recycling program. In many cities you can get these cartons very cheaply from scrap paper people - they will sell used ones. Or they can be obtained from plastic companies that use these containers when they receive the resin for plastic. We will, when they are shipped to our plant replace them on a one-for-one basis.

Q: How about boxes like soap boxes and things like that. Now I have never seen a paper drive where they collect that. What happens to those boxes?

A: Andy Waters: First let me tell a story about soap boxes. When I was in the Kansas City operation, we handled the Colgate-Polmolive

manufacturing facility there, from whom we bought about 150 tons/month of "box cuttings." In addition we would often buy boxes that had soap put in them but then broke or for some miscellaneous reason they were thrown out. We had a couple of mills that bought these boxes including the soap. We used them for one purpose; clean out the pulpers. We got into a little problem--we shipped 100 tons of it to a mill that had never experienced it before, they put it all in the pulpers and proceeded to have enough foam to wash the entire city! But box cuttings grade right now is in extremely high demand. The price for it has moved twice already this month and may move again. It is difficult to get that from a post-consumer dealer for the simple reason that there is an awful lot of contamination in it. Most of this material that is recycled is the leftover cuttings bought from the carton plant. We will buy it as post consumer waste but cleaning it up has some definite problems.

APPENDIX

This release was provided to the editors following the workshop.

OHIO BIRP

Labor and Industry For a Cleaner Ohio, LICO, is in the process of establishing the Ohio Beverage Industry Recycling Program, Ohio BIRP.

BIRP will be a network of multi-material, buy-back recyclers across Ohio. Their recycling centers will be located in convenient and safe areas where families will go after dark. The centers will handle all glass containers, aluminum and bi-metal cans, PET soft drink plastic bottles and newsprint plus any additional items the recycler chooses to handle. The public will be paid for the material they recycle.

Our first priority will be to establish multi-material recycling in the 51 Ohio cities with 25,000 or more population. If multi-material recyclers are operating in the community, we will encourage them to join BIRP. If no multi-material, buy-back recyclers are operating, we will approach the commercial recycler to sell him on the idea of establishing a center. If no interest is generated with the commercial recycler, we will work to locate an entrepreneur who is interested in going into business.

Ohio BIRP will be an information source on markets for recyclables and prices paid for materials.

LICO hopes to launch the Ohio BIRP program by mid-1984.